Department of Transportation
Federal Aviation Administration
Office of Airworthiness
Washington, D.C.

TSO-C38c

Date 8/3/81

Technical Standard Order

Subject: TSO-C38c, VHF RADIO COMMUNICATIONS RECEIVING EQUIPMENT OPERATING WITHIN 117.975 TO 136.000 MEGAHERTZ

(a) Applicability.

(1) Minimum Performance Standard. This Technical Standard Order (TSO) prescribes the minimum performance standard that VHF radio communications receiving equipment must meet in order to be identified with the applicable TSO marking. New models of VHF radio communications receiving equipment that are to be so identified and that are manufactured on or after the date of this TSO must meet the standard set forth in Radio Technical Commission for Aeronautics (RTCA) Document No. DO-156, "Minimum Performance Standards - Airborne Radio Communications Receiving Equipment Operating Within the Radio Frequency Range 117.975-136.000 Megahertz," dated August 2, 1974.

(2) Additions.

i. In addition to paragraph 1.0, General Standards, of RTCA Document No. DO-156, all materials used must be self-extinguishing when tested in accordance with applicable requirements of §§ 25.853 and 25.1359(d) and Part 25, Appendix F, of the Federal Aviation Regulations (FAR) effective May 1, 1972. The material may be of a size and be mounted for the test in accordance with paragraph (b) of Appendix F or may be of a size and mounted as used in the aircraft. Small parts (such as knobs, fasteners, seals, grommets, and small electrical parts) that would not contribute significantly to the propagation of a fire need not be tested.

ii. If the equipment design is implemented using microcomputer techniques, the software must follow future published and approved verification, validation, documentation, and maintenance criteria outlined in RTCA documents and FAA Advisory Circulars on the subject.

(3) Environmental Standards. RTCA Document No. DO-156 incorporates as a reference RTCA Document No. DO-138, "Environmental Conditions and Test Procedures for Airborne Electronic/Electrical Equipment and Instruments," dated June 27, 1968, and may be used until December 31, 1981 (see exception).

(4) Exceptions.

i. This TSO does not include 50 KHz radio receiving equipment.

ii. Equipment built for use outside the United States may include receivers defined by paragraph 1.4 of RTCA DO-156 as Class A, B, C, or D.

iii. Equipment built for use with the United States must include receivers defined by paragraph 1.4 of DO-156 as Class C and D only.

iv. The conditions and procedures prescribed in RTCA Document No. DO-160A, "Environmental Conditions and Test Procedures for Airborne Equipment," dated January 1980, are to be utilized after December 31, 1981, and it is acceptable to utilize DO-160A prior to December 31, 1981, but it is not acceptable to intermix conditions and procedures of DO-138 and DO-160A.

(b) Marking. In addition to the marking specified in FAR § 21.607(d), the following information shall be legibly and permanently marked on the equipment:

(1) The environmental categories in which it has been qualified to operate in accordance with the applicable RTCA document, however, this marking is not necessary when the alternative is used as described in a RTCA DO-160A companion document.

(2) Each separate component of equipment that is TSO'd (antenna, receiver, controller, etc.) with at least the name of the manufacturer and the TSO number.

(3) With regard to FAR § 21.607(d)(2), the part number is to include hardware and software identification or a separate part number may be utilized for hardware and software. Either approach is to include a means for showing modification status.

(c) Data Requirements. In accordance with FAR § 21.605, the manufacturer must furnish the Chief, Engineering and Manufacturing Branch, Flight Standards Division (or in the Western-Pacific Region, Chief, Aircraft Certification Division), Federal Aviation Administration, in the region in which the manufacturer is located, one copy each of the following technical data:

(1) Operating instructions.

(2) Equipment limitations.

(3) Installation procedures and limitations.

(4) Schematic drawings.

(5) Wiring diagrams.

(6) Specifications.

(7) Equipment calibration and maintenance procedures, which may be submitted within 6 months after production begins or within 6 months after TSO authorization is granted, whichever occurs first.

(8) List of the major components (by part number) that make up the equipment system complying with the standards prescribed in this TSO.

(9) A drawing list, enumerating all the drawings and processes that are necessary to define the article design.

(10) Manufacturer's TSO qualification test report.

(d) Data to be furnished with manufactured units. One copy of the data and information specified in paragraphs (c)(1), (c)(2), (c)(3), and furnished upon request (c)(4), (c)(5), (c)(6), (c)(7), and (c)(8) of this TSO must go to each person receiving, for use, one or more articles manufactured under this TSO.

(e) Previously Approved Equipment. VHF radio receiving equipment approved prior to the date of this TSO may continue to be manufactured under the provisions of the original approval.

(f) Availability of Reference Documents.

(1) A copy of RTCA Document No. DO-138 is available for inspection at any FAA regional office, in the Engineering and Manufacturing Branch of the Flight Standards Division (or in the Western-Pacific Region, the Aircraft Certification Division).

(2) Copies of RTCA Document Nos. DO-156 and DO-160A may be purchased from the Radio Technical Commission for Aeronautics Secretariat, 1717 H Street, N.W., Washington, D.C. 20006.

(3) The RTCA Document companion to DO-160A describing alternative to environmental marking procedure may be obtained from RTCA when approved by RTCA Executive Committee and adopted by the FAA.

(4) The RTCA document describing software criteria may be obtained from RTCA when approved by RTCA Executive Committee.

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